

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-45. (Canceled)

46. (New) A method for controlling a data transmission rate on a reverse link in a mobile communications system including a plurality of base stations and a plurality of mobile stations, the method comprising:

determining at a base station a data rate control command for controlling a transmission data rate of each mobile station to consider a channel condition or state of each mobile station;

sending each data rate control command via a forward common channel in a dedicated manner to the mobile stations, the data rate control command being formed of at least one rate control bit that is signal point mapped to at least one symbol of +1, -1, and 0 to indicate whether the mobile station should increase, decrease, or maintain its current data transmission rate; and

allowing each mobile station to adjust or maintain its data transmission rate based on the data rate control command.

47. (New) The method of claim 46, wherein determining the data rate control command is based on an interference level and a transmission condition of each mobile station.

48. (New) The method of claim 47, wherein the interference level is determined based on the signals received from each mobile station.

49. (New) The method of claim 47, wherein the transmission condition is based on a currently assigned data transmission rate.

50. (New) The method of claim 46, wherein determining the data rate control command is based on a status of each mobile station.

51. (New) The method of claim 46, wherein if a current data transmission rate of a particular mobile station is to be maintained, the rate control bit is mapped to a symbol of 0.

52. (New) The method of claim 46, wherein the data rate control command is inserted into certain bit positions in a channel slot of the common channel.

53. (New) The method of claim 52, wherein the certain bit position is determined based on a relative offset of a first bit position of the channel slot.

54. (New) The method of claim 46, wherein determining the data rate control command is based on an interference level related to a rise over thermal (ROT) parameter.

55. (New) The method of claim 46, wherein determining the data rate control command further includes determining a transmission condition of each mobile station based upon a cell interference probability of each mobile station.

56. (New) The method of claim 55, wherein the base station receives the cell interference probability reported from each mobile station or calculates the cell interference probability by itself.

57. (New) The method of claim 46, wherein determining the data rate control command further includes calculating a transmission condition of each mobile station using the cell interference probability applied to the energy required for a data rate for a current transmission frame for each mobile station.

58. (New) The method of claim 46, wherein each mobile station transmits to the base station data rate information indicating whether the mobile station can transmit data in a next frame by increasing its data rate, and the data rate information is used when determining the data rate control command indicating how a current data transmission rate of a respective mobile station is to be adjusted.

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59. (New) The method of claim 58, wherein the data rate information is set as “increase” if a remaining transmission power of each mobile station is above a threshold, and if the data rate of a current transmission is set below a maximum data rate; otherwise, the data rate information is set as “unchanged”.

60. (New) The method of claim 46, wherein the data rate control command is determined based on data rate information indicating whether the mobile station can transmit in a next frame by increasing its data rate.

61. (New) The method of claim 60, wherein the data rate control command is set as “increase” when a data rate information is set as “increase”.

62. (New) The method of claim 58, wherein the data rate information is set as “increase” or “unchanged” based on at least one of a remaining power, a current transmission rate, and a number of bits within a transmission buffer of each mobile station.

63. (New) The method of claim 46, wherein the mobile station uses a bit that is sent on a reverse packet data control channel to indicate whether it has enough power and data to increase its data transmission rate on a reverse packet data channel.

64. (New) The method of claim 63, wherein the bit is set as "1" if the mobile station has sufficient data and power headroom to transmit at a rate corresponding to a traffic-to-pilot ratio that is greater than a current authorized traffic-to-power ratio; otherwise, the bit is set as "0".

65. (New) The method of claim 46, wherein a data rate control command is generated in accordance with an interference level, a transmission energy level, and the data rate information.

66. (New) The method of claim 46, wherein the determining at the base station comprises:

obtaining a total interference level of signals received from mobile stations served by the base station,

obtaining a data transmission control threshold value according to the total interference level,

obtaining a transmission condition value using a data transmission rate used by the mobile station for transmission and a pilot signal power value reported from the mobile stations, and

generating a rate control command by comparing the transmission condition value with the data transmission control threshold value.

67. (New) The method of claim 66, wherein the data transmission control threshold value is either maintained if the total interference level is within a fixed range, or the data transmission threshold is increased if the total interference level is less than the fixed range, or the data transmission threshold is decreased if the total interference level is greater than the fixed range.

68. (New) The method of claim 66, wherein during the comparison of the transmission condition value with the data transmission control threshold value,

a data rate control parameter is set as “decrease” if the transmission condition value is greater than the data transmission control threshold value,

the data rate control parameter is set as “increase” if the transmission condition value is smaller than twice the data transmission control threshold value, and

otherwise the data rate control parameter is set as “maintain”.

69. (New) A base station apparatus for controlling a data transmission rate on a reverse link in a mobile communications system including a plurality of mobile stations, the apparatus comprising:

determining means adapted to determine a data rate control command for controlling a transmission data rate of each mobile station to consider a channel condition or state of each mobile station; and

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a transceiver connected with the determining means adapted to send each data rate control command via a forward common channel in a dedicated manner to the mobile stations,

wherein the data rate control command being formed of at least one rate control bit that is signal point mapped to at least one symbol of +1, -1, and 0 to indicate whether the mobile station should increase, decrease, or maintain its current data transmission rate.

70. (New) The apparatus of claim 69, wherein the determining means is adapted to determine the data rate control command based on an interference level based on signals received from each mobile station and a transmission condition of each mobile station.

71. (New) The apparatus of claim 69, wherein the data rate control command is based on a status of each mobile station.

72. (New) The apparatus of claim 69, wherein if the current data transmission rate of a particular mobile station is to be maintained, then the rate control bit is mapped to a symbol of 0.

73. (New) The apparatus of claim 69, further comprising means adapted to map the data rate control command to at least one symbol of +1, -1, and 0.

74. (New) The apparatus of claim 69, further comprising means adapted to insert the data rate control command into certain bit positions in a channel slot of the common channel.

75. (New) The apparatus of claim 74, wherein the inserting means is adapted to determine the certain bit position based on a relative offset of a first bit position of the channel slot.

76. (New) The apparatus of claim 69, wherein the determining means is adapted to determine the data rate control command based on data rate information indicating whether the mobile station can transmit data in a next frame by increasing its data rate.

77. (New) The apparatus of claim 69, wherein the determining means is adapted to determine an interference level on a basis of a rise over thermal (ROT) parameter.

78. (New) The apparatus of claim 69, wherein the determining means is adapted to determine a transmission condition on a basis of a currently assigned data transmission rate of each mobile station.

79. (New) A mobile station apparatus for use in a mobile communications system for controlling a data transmission rate on a reverse link, the apparatus comprising:

receiving means adapted to receive a data rate control command of a base station on a forward link common channel in a dedicated manner, the data rate control command being formed of at least one rate control bit that is signal point mapped to at least one symbol of +1, -1, and 0 to indicate whether the mobile station should increase, decrease, or maintain its current data transmission rate; and

control means connected with the receiving means adapted to control the data transmission rate based on the data rate control command.

80. (New) The apparatus of claim 79, wherein the control means is adapted to determine data rate information as “increase” or “unchanged” to indicate how the mobile station should transmit data in a next frame to the base station.

81. (New) The apparatus of claim 80, wherein the control means is adapted to determine the data rate information based on at least one of a remaining power, a current transmission data rate, and a number of bits within a transmission buffer of each mobile station.

82. (New) The apparatus of claim 79, wherein the control means is adapted to control a power of the mobile station according to the data rate control command.

83. (New) The apparatus of claim 79, wherein the mobile station transmits to the base station data rate information indicating whether the mobile station can transmit data in a next frame by increasing its data rate, and the data rate information is used when generating the data rate control command indicating how a current data transmission rate of the mobile station is to be adjusted.

84. (New) The apparatus of claim 83, wherein the data rate information is set as “increase” if a remaining transmission power of the mobile station is above a threshold, and if the data rate of a current transmission is set below a maximum data rate; otherwise, the data rate information is set as “unchanged”.

85. (New) A method for controlling a data transmission rate on a reverse link received by a mobile station apparatus for use in a mobile communications system, the method comprising:

receiving a data rate control command of a base station on a forward link common channel in a dedicated manner, the data rate control command being formed of a least one rate control bit that is signal point mapped to at least one symbol of +1, -1, and 0 to indicate whether the mobile station should increase, decrease, or maintain its current data transmission rate; and

controlling the data transmission rate based on the data rate control command rate.

86. (New) The method of claim 85, further comprising determining data rate information as "increase" or unchanged" to indicate how the mobile station should transmit valid data in a next frame to the base station.

87. (New) The method of claim 86, wherein determining the data rate information is based on at least one of a remaining power, a current transmission data rate, and a number of bits within the transmission buffer of each mobile station.

88. (New) The method of claim 85, wherein the mobile station transmits to the base station data rate information indicating whether the mobile station can transmit data in a next frame by increasing its data rate, and the data rate information is used when generating the data rate control command indicating how a current data transmission rate of the mobile station is to be adjusted.

89. (New) The method of claim 88, wherein the data rate information is set as "increase" if a remaining transmission power of the mobile station is above a threshold, and if the data rate of a current transmission is set below a maximum data rate; otherwise, the data rate information is set as "unchanged".